

Sub E37 11. (Amended) Grass-cutting head as claimed in claim 8, wherein said support for said spool has a cylindrical wall around which the spool is placed and said support also includes a supporting collar for supporting said spool.

D⁶ [Please amend claim 12 as follows.

12. (Amended) Grass-cutting head as claimed in claim 11, wherein said support has a cylindrical support in which said actuating slider moves, the actuating slider being elastically pressed by said spring-action member.

REMARKS

The specification and claims have been amended to address the Examiner's comments in the March 23, 2001 communication. Applicant apologizes for not addressing all the rejections and objections in the last Office Action. Many of the above changes, especially those to the specification, were to be made in the last Amendment, but were inadvertently not included in the actual Amendment. Several other changes to the specification which were inadvertently not included have also been included in this response.

Claim 4 has been rejected as being unclear as to what structure "anti-rotation means" refers. In the embodiment of Fig. 2, the anti-rotation means is represented by reference numeral 29 and the complimentary teeth in the housing portion 3. This is described in the specification on page 8 lines 15 - 27. This portion of the specification has further been amended to

specifically set forth that the teeth 29 and the complimentary teeth on the housing portion 3 form the anti-rotation means. It is Applicant's position that the anti-rotation means is clearly described in the present application.

Claim 8 has been amended to set forth that the support has the structural relationship of supporting the spool. It is Applicant's position that a person of ordinary skill in the art would understand from the specification and drawings that the support 13 supports the stool 5. Claim 8 now clearly provides the structural cooperation relationship between the support and the spool.

Claim 11 has been amended to depend from claim 8, and this provides proper antecedent basis for the support. Claim 11 also has been amended to set forth that the supporting collar has the structural relationship of supporting the spool. In the embodiment of Fig. 1, the supporting collar is indicated by reference numeral 13A and this is described in the specification on page 6 lines 31 - 32. It is Applicant's position that the structural relationship of claim 11 is understood by a person of ordinary skill in the art in view of the specification and drawings.

Claim 12 has been amended to set forth that the support has a cylindrical support in which the actuating slider moves. The cylindrical support clearly has a structural relationship with the actuating slider, and therefore it is Applicant's position that claim 12 is understandable to a person of ordinary skill in the art.

The antecedent rejection with regard to claim 13 has been taken care of by the amendment to claim 11 from which claim 13 depends. Claim 13 now has proper antecedent

basis for the annular cover in claim 8.

Applicant thanks the Examiner for the careful reading of the amendments and for pointing out discrepancies. If the Examiner has any comments or suggestions which would further favorable prosecution of this application, the Examiner is invited to contact Applicant's representative by telephone to discuss possible changes.

At this time Applicant respectfully requests reconsideration of this application, and based on the above amendments and remarks, respectfully solicits allowance of this application.

Respectfully submitted
for Applicant,

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Enclosed: Marked-Up Pages 7, 8 and 9 from the Specification
Marked-Up Version of the Claims

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action member consisting of a helical spring 17 housed in a cylindrical seat formed in the support 13. Inside this cylindrical seat is a moveable actuating slider 19 with projections 19A that project through longitudinal slots 13X in the cylindrical wall of the support 13.

5 The projections 19A form stops acting on two series of teeth 5A and 5B which are offset relative to each other angularly and axially inside the through hole of the spool 5.

 The actuating slider 19 is pushed by the spring-action member 17 against a knob 21 mounted on and retained by the journal 9.

10 The operation of the line feed mechanism, ^{including} ~~consisting of~~ the actuating slider 19, with its projections 19A, ^{the spring action member 17} and the teeth 5A, 5B of the spool 5 is similar to that described in US-A-5,095,688, and will therefore be described only briefly here. Pressing on the knob 21 compresses the spring-action member 17 and therefore moves the actuating slider 19 in
15 such a way that the projections 19A of the latter disengage from teeth 5B and engage teeth 5A, which are offset angularly relative to teeth 5B. When this actuation is performed with the head 1 turning, the centrifugal force acting on the cutting line F turns the spool 5 until teeth 5A are stopped by the projections 19A. Releasing the knob 21 causes the actuating slider 19
20 to be moved back to the initial position (illustrated in Figs. 1 and 2) by the spring-action member 17, with consequent disengagement of teeth 5A and engagement of teeth 5B by the projections 19A as a result of a further angular rotation of the spool 5 due to centrifugal force.

 Each time the knob 21 is pressed, therefore, the spool 5 turns
25 through an angle equal to twice the offset between the teeth 5A and 5B.

 Around the collar 13A supporting the spool 5 is a basically cylindrical closing wall 13B on which is mounted an annular cover 25. This cover has an edge 25A that surrounds the free edge of the circumferential wall 3A of the housing portion 3. The cover 25 may be held in position by
30 its interference with the closing wall 13B and/or by interference between the edge 25A and the circumferential wall 3A, or by means of spring-action projections. *(not shown in Figures 1 and 2)*

 During the operation of the head, which for this purpose is fitted

to the rotating hub of a brushcutter via the threaded portion 7A of the hub 7, and revolved with the lines F projecting from the bushings 4, the cutting lines F wear away and it therefore becomes necessary to restore the cutting lines projecting from the head 1 to their correct length by
5 depressing the knob 21 and thus operating the actuating slider 19. After repeated line feed operations, when the line is exhausted, a new supply of cutting line F must be wound onto the spool 5.

To do this, it is sufficient to remove the annular cover 25 to give access from below to a pair of anchor holes 5D for the ends of the cutting
10 line F. The anchor holes 5D are in line with slots 5C in the lower flange 5G of the spool 5. The initial end of the new supply of line can be passed through the bushings 4 and through the radial slots 5C to allow the operator to grasp it in the area made accessible by the removal of the annular cover 25, and then insert it in the corresponding anchor hole 5D.

✓ 15 Having secured the ends of the line in the holes 5D, the operator, by twisting the closing wall ¹³⁶~~135~~ of the spool support 13, can rotate, in the winding direction, the assembly made up of the button 21, the actuating slider 19, the support 13 and the spool 5 around the hub 7 axis. Rotation in the winding direction is permitted by the shaping of sawtooth-
20 section end teeth 29 formed on that portion of the support 13 which is pushed against the housing portion 3, the latter having complementary teeth, as can be seen in particular in the cutaway view, Fig. 2.

The reverse rotation between the support 13 and the housing portion 3 (the direction in which the line is unwound) is not permitted, so
25 that spontaneous rotation in the line unwinding direction is prevented, not only during rewinding of the supply of line but also when the head is in operation.

The teeth 29 and the complementary teeth on the housing portion 3 form an anti-rotation means for rotating in a winding direction, but not in an unwinding direction
The system of mutual locking between the housing portion 3, the support 13 and the knob 21 may differ from this. For example, the
30 central hub 7 may be omitted and the connection may be provided by a system of spring-action fingers. Similarly, the connection between the head and the brushcutter may be provided by a snap-engaging quick-coupling system or the like, of a type known per se, rather than by means of a

threaded journal. Similarly, the knob 21 and the actuating slider 19 may be constructed in one piece. The journal 9 may be screwed in by a socket wrench passing through a hole in the knob 21, or the latter may be coupled in torsion to the journal 9 to enable it to rotate.

5 Figs. 2A and 2B show a perspective view of a ^{modified housing 3 of a} head equivalent to the head shown in Figs. 1 and 2 in the open condition and show the operation of inserting a new supply of cutting line F. Parts identical or equivalent to those of Figs. 1 and 2 are indicated by the same reference numbers. The annular cover 25 has been removed to allow access from
10 the outside to the underside of the spool 5. This spool has slots 5C which are closed off toward the edge of the respective flange of the spool rather than open as in Fig. 1. Also, the lower flange 5G of the spool 5 is provided on its outermost surface with arcuate projections 5H to facilitate the winding of the new supply of cutting line F by hand. The knob 21 is made
15 of a smaller diameter than the knob 21 of Figs. 1 and 2, and a protective membrane 22 is arranged between it and the annular closing wall 13B of the support 13.

Also shown in Figs. 2A and 2B are spring-action tabs 6 formed integrally with the housing portion 3. These are for fastening the annular
20 cover 25 (omitted in Figs. 2A and 2B) in place.

Fig. 2A shows the ends Fx of two lengths of cutting line F that have been passed from the outside of the housing 3 in through the bushings 4. The ends Fx project out through the slots 5C and can therefore be grasped by the user, pulled further to draw more line F through the
25 bushings 4 and then inserted - thereby forming a loop Fy (Fig. 2B) - in the anchor holes 5D. The line F can then be pulled radially from the outside to take up the loop Fy and then be wound up by turning the spool 5 with the aid of the arcuate projections 5H.

Figs. 3 and 4 show a different embodiment of the head
30 according to the invention. The head, indicated by the general reference 101, comprises a housing made up of a main portion 103 and a lower cover 106. Inside the housing is a spool 105 with two annular flanges 105X and 105Y. The spool 105 includes a central through hole through which

8. Grass-cutting head as claimed in claim 7, wherein:
said housing includes a first housing portion, through which extends an axial hub of a rotary drive, and said spool being placed in said first housing portion;
a support for supporting said spool, said support being mounted on said axial hub and elastically pressed against said first housing portion by said spring-action member;
axially elongate openings in said support, through which pass said moveable stops carried by said actuating slider and engage with the teeth on the spool; and
an annular cover closes said housing and extends around the support for said spool.

11. Grass-cutting head as claimed in claim 7, wherein said support for said spool has a cylindrical wall around which the spool is placed and said support also includes a supporting collar for supporting said spool.

12. Grass-cutting head as claimed in claim 11, wherein said support has a cylindrical support for ~~said spring-action member~~, in which said actuating slider moves, the actuating slider being elastically pressed by said spring-action member.